Attorney Docket No. 62780A *PATENT*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Thoi H. Ho, *et al.* Art Unit: 1794
Serial No. 10/579,360 Examiner: Erik Kashnikow
Filed: May 10, 2006
For: STABILIZED POLYETHYLENE MATERIAL

MS AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR § 1.132

I, Dr. Kenneth Oliphant declare and say as follows:

1. I am a chemical engineer and have more than 16 years experience in the polymer industry. I received an Undergraduate degree in Chemical Engineering from the University of Toronto in Toronto, Ontario, in 1989, and a Doctorate degree in Chemical Engineering from Queens University in Kingston, Ontario in 1994.

   Since 1998, I have held the position of Executive Vice President and Chief Technology Officer at Jana Laboratories Inc., at Aurora, Ontario and am responsible for Jana's plastic pipe technology development. My research at Jana Laboratories Inc. is in the area of performance validation for plastic piping materials.

From 1996 to 1998, I held the position of position of Research Engineer at AT Plastics and was responsible for formulation development of potable water plastic piping products.

2. I am familiar with a broad variety of industry standard materials including Dow's product line. In addition, I am familiar with Dow Developmental Products that utilize Dow's Advanced Stabilization Packages.

3. Based on my knowledge, testing of these materials has shown a significant and unanticipated improvement in chlorine resistance performance over current state-of-the-art materials.

4. The data is summarized in the attached report.

5. I further declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 2010/03/11

By: _____

KEN OLIPHANT

(Name printed)

JANA

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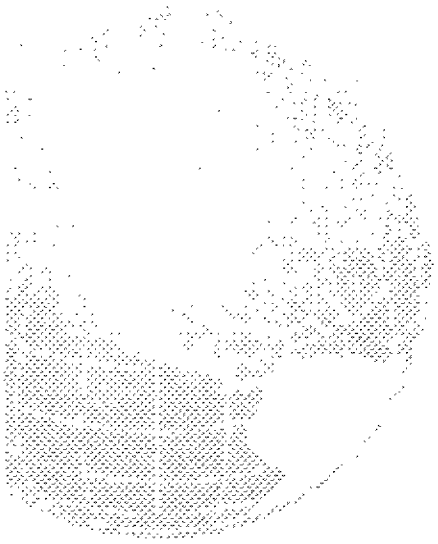
Assessment of the Chlorine Resistance of Two PE Pipe Formulations



March 11, 2010

Jana Laboratories Inc. 280B Industrial Pkwy S. Aurora, Ontario L4G 3T9 Ph: 905-726-8550 Fax: 905-726-8609 www.janalab.com

Report No.: Assessment of the Chlorine Resistance of Two PE Pipe Formulations

Client: Dow Chemical Company
2301 N. Brazosport Blvd.
Freeport, TX 77541-3257
U.S.A.

Date of Issue: March 11, 2010

1.0 Purpose of Test

The purpose of this report is to provide an assessment of the chlorine resistance of two polyethylene (PE) pipe formulations.

2.0 Test Item Identification and Description

The following samples, as shown in Table 1, were provided for testing by the Client. No further detail of the samples was provided.

Table 1: Sample Description

Jana Sample ID	Description	Print Line
1	½" CTS Black PE pipe (PE A) - Standard Stabilization Package	-
2	½" CTS Natural SDR9 PE pipe - Advanced Stabilization Package	DOW 1/2" CTS-OD SDR 9 PE ASTM F876/877 DIMENSIONAL SPECIFICATIONS 11/19/07 13:45:08 XUR-YM 2007 3036304 LOT 199902427 14-12

3.0 Test Method

Chlorine Resistance Testing (Jana Procedure APTF-2) was performed in accordance with ASTM F2263-07e1 *Standard Test Method for Evaluating the Oxidative Resistance of Polyethylene (PE) Pipe to Chlorinated Water*. Chlorine resistance testing was conducted on Jana's Accelerated Pipe Testing Facility. This unit provides for continuous flow testing of plastic piping materials under accelerated conditions. Specimens were exposed to continuous flowing chlorinated Reverse Osmosis water and tested under conditions as detailed in Table 2. Testing was performed at two test conditions.

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Specimens were tested as 15" lengths with either PVDF compression fittings or standard ASTM F1807 brass insert crimp fittings on both pipe ends. The specimen length-to-diameter ratio is nominally 24.

Table 2: Primary Test Variables and Control Limits

Parameter	Actual	Control Limits
pH	6.8	± 0.2
Chlorine (mg/L)	4.4	± 0.2
ORP (mV)	> 825	Measured
Fluid Temperature (°C)*	90	± 1
Air Temperature (°C)*	90	± 1
Fluid Pressure (psig)	See Table 3	± 1%
Flow Rate (USGPM)	0.1	± 10%

* The Fluid and Air Temperatures are controlled at the same set-point. No measurable temperature drop across the test specimens is observed.

Testing to ASTM F2263 is covered by Jana's ISO 17025 scope of accreditation (I.A.S. TL-256).

4.0 Performance Comparison

Sample 2, with the Advanced Stabilization Package (ASP), significantly outperformed the same material with a standard stabilization package (Sample 1). In ASTM F2263 testing, the ASP sample lasted roughly three times as long as the standard material (Table 3), representing a significant change in material performance.

Table 3: Comparison of Failure Times

Material	Temperature (°C)	Pressure (psig)	Stress (psi)	Failure Time (h)	Average Failure Time (h)	Δ versus Other Sample
Sample 2 (Advanced Stabilization)	90	60	219	9,237	9,173	+330%
			218	9,109		
Sample 1 (Standard Stabilization)			242	3,206	2,778	-330%
			232	2,350		
Sample 2 (Advanced Stabilization)		40	149	17,040*	16,866*	> +295%
			147	16,691*		
Sample 1 (Standard Stabilization)			158	5,204	5,726	-295%
			158	6,247		

* On-test, non-failures.

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Issued by

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Appendix A

Dr. Ken Oliphant, P. Eng., is Executive Vice President and Chief Technology Officer of Jana Laboratories Inc. Dr. Oliphant received his undergraduate degree in Chemical Engineering from the University of Toronto and his Doctorate degree in Chemical Engineering from Queen's University at Kingston, Ontario. He has spent his entire career in the Plastics Industry with specific focus in Plastic Piping System performance validation and lifetime forecasting. Dr. Oliphant has specific expertise in Plastic Piping System failure analysis, Slow Crack Growth (SCG) characterization, Rapid Crack Propagation (RCP) characterization, environmental impact on plastic piping systems and performance forecasting of plastic piping systems. Dr. Oliphant is very active in the Plastic Piping Systems industry through involvement in the Plastics Pipe Institute (PPI), the Hydrostatic Stress Board (HSB), ASTM International, CSA International, and ISO TC/138.

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